Section 8
Improvement Program

This Section describes Seattle Public Utilities' (SPU) short-term and long-term capital improvement program. Section 8.1 provides background information regarding the short-term proposed 2001-2006 Capital Improvement Program (CIP) and long-term projected 2001-2025 Capital Facilities Plan (CFP). Section 8.2 describes the process for identifying and selecting projects. Section 8.3 provides information regarding specific projects and planned investments. Finally, Section 8.4 describes the schedule for capital projects.

8.1 Introduction

SPU prepares both a short-term (6-year) Capital Improvement Program (CIP) and a long-term (25-year) Capital Facilities Plan (CFP) to help ensure needed system improvements are planned, budgeted, and implemented. The six-year CIP describes all of the capital projects planned over the near-term, with emphasis on the detailed budget of the first two years. It is updated every two years as part of the City's budget process, with minor adjustments made in mid-biennium. The most recent complete update was prepared in 1998; minor adjustments were adopted by the Seattle City Council in November 1999. The 25-year CFP describes all of the capital projects needed over the longer term and is updated somewhat less frequently than the CIP. The most recent complete CFP update was prepared in 1995.

Staff are currently preparing the proposed 2001-2006 CIP, which will be considered by the Executive Office and the City Council during the July through November 2000 period. Staff have also drafted a projected 2001-2025 CFP. While it is likely that these two documents will be modified somewhat during the budget adoption process, they more closely reflect the capital improvement work SPU will be performing in the future; accordingly, the remainder of this section of the Water System Plan (WSP) is based on the proposed 2001-2006 CIP and projected 2001-2025 CFP rather than the adopted 1999-2004 CIP and 1995-2019 CFP.

Important Note: This WSP was prepared using the versions of the proposed 2001-2006 CIP and 2001-2025 projected CFP that were available April 15, 2000.

Excerpts from the proposed 2001-2006 CIP, including descriptions of major projects, are included in Appendix 8-A. The projected 2001-2025 CFP is included in Appendix 8-B. For this WSP, only the years 2001-2020 are used from the CFP to align with the planning horizon for this document.

8.2 Project Identification and Prioritization

In late 1999 and early 2000, staff throughout SPU took part in a department-wide effort to identify new CIP projects as well as changes and adjustments to previously identified projects. Meetings to facilitate this process were held with groups of SPU staff whose work is related to the following categories of projects:

- Conservation
- Dams
- Distribution system water mains and hydrants
- Habitat restoration, habitat conservation plan implementation, fisheries, and Endangered Species Act compliance
- Information technologies, including SCADA and customer service improvements
- Intermittent supplies
- Metering and service connections
- New supply
- Neighborhood planning and other agency relocations
- Operations facilities
- Pump stations, including new pump stations as well as pump station rehabilitation
- Reservoirs
- Seismic upgrades
- Tanks and standpipes
- Transmission pipelines, including new pipelines as well as pipeline rehabilitation
- Water quality
- Watershed facilities

Each group created and prioritized a detailed list of new and previously identified projects. The general criteria used in identifying and prioritizing new projects were SPU's goals of:

- Regulatory compliance and public health protection
- Environmental stewardship
- Customer service
- Infrastructure maintenance needs
- Strategic technology implementation
- Neighborhood benefits
- Meeting growing demand

Whenever possible, various project alternatives were considered and the apparent most cost-effective approach (based on need, risk, cost, and benefit) was included on the list. The group lists were then merged into a single list and compared with projected funding availability based on estimated rate increases. With only high priority projects included in years 2001-2006, the proposed CIP exceeds the funding levels presented to the Executive Office and City Council in previous years, so there is the potential for the proposed CIP to be scaled back during the budget adoption process.

8.3 Capital Improvement Program Categories and Projects

The proposed CIP and projected CFP are organized broadly into five categories: Water Infrastructure, Water Quality, Water Supply and Conservation, Other Agency Projects, and Technology. Each of these categories is described in more detail below.

8.3.1 Water Infrastructure

The greatest investment will be in the water infrastructure category.

Water infrastructure projects include efforts to rehabilitate or replace system components that have either exceeded their useful lives or are beyond repair, or to make improvements that extend the useful lives of assets. This program category includes repairs and upgrades to water mains, pump stations, tanks and standpipes, dams, operations facilities, and watershed facilities. It also includes metering repairs and upgrades and service connection work. A total of $644 million in infrastructure projects was included in the projected CFP for 2001-2020. Tables 8-1a and 8-1b show the sum of the different projects in this program category. Some of the key projects and programs in this category are as follows (with estimated 20-year expenditures):

- Distribution System (Customer) Meter Replacement ($33M)
- Service Renewals and Retirement Program ($61M)
- Installation of New Taps ($55M)
- Watermain and Feeder Replacement and Rehabilitation ($86M)
- Blowoff Improvements on Transmission Lines ($21M)
- Cathodic Protection of pipelines ($8M)
- Rehabilitation/Replacement of Transmission Lines ($185M)
- Seismic Upgrades of Pipelines ($42M)
- Cedar Watershed Bridge Replacement and Road Improvements ($8M)
- Booster Pump Stations in Distribution System ($11M)
- Completion of four additional phases (II, III, IV, and VIB) of the Tolt 2 Pipeline ($30M)

Table 8-1a
Water Infrastructure Projects and Costs
(Millions of Y2000 Dollars)
Proposed 6-Year CIP

	2001	2002	2003	2004	2005	2006	Totals
Dam Structural Improvements	0.7	3.2	2.7	0.6	0.4	4.2	11.8
Distribution System Improvements	3.3	4.8	5.8	6.0	7.5	15.5	42.9
Meters and Services	8.1	8.1	7.8	7.9	8.1	8.1	48.1
Miscellaneous Infrastructure	1.5	1.8	1.5	2.6	2.1	2.8	12.3
Pipeline Improvements and Additions	17.9	5.5	5.7	10.3	8.5	5.1	53.0
Pump Stations	1.2	5.8	1.7	2.6	0.0	0.0	11.3
Reservoir Improvements	0.3	0.9	0.4	0.0	0.0	0.2	1.8
Tanks and Standpipes	3.0	4.9	1.3	2.0	2.7	3.0	16.9
Watershed Improvements	7.2	2.9	2.7	2.6	1.4	0.7	17.5
Total	43.2	37.9	29.6	34.6	30.7	39.6	215.6

Table 8-1b
Water Infrastructure Projects and Costs
(Millions of Y2000 Dollars)
Projected 20-Year CFP

	2001-2005	2006-2010	2011-2015	2016-2020	Totals
Dam Structural Improvements	7.7	4.2	0.0	0.3	12.2
Distribution System Improvements	27.5	37.8	20.3	21.3	106.9
Meters and Services	40.0	40.9	41.1	40.8	162.8
Miscellaneous Infrastructure	9.6	8.8	7.5	7.5	33.4
Pipeline Improvements and Additions	48.0	66.8	79.6	69.2	263.6
Pump Stations	11.3	0.5	0.4	0.4	12.6
Reservoir Improvements	1.6	2.1	1.8	0.3	5.7
Tanks and Standpipes	13.9	5.6	3.3	3.3	26.2
Watershed Improvements	16.9	3.2	0.5	0.0	20.6
Total	176.5	169.9	154.5	143.1	644.0

Water quality projects are needed to meet regulatory requirements.

8.3.2 Water Quality

Water quality projects (Tables 8-2a and 8-2b) are required to protect public health, and to meet state and federal health regulations. This program category includes design and construction of major water treatment facilities, and the program for covering SPU's nine, in-town open reservoirs. A total of $171 million in water quality projects is included in the projected CFP for 2001-2020. Key projects and programs in this category are as follows (with estimated 2-year expenditures).

- Design and construction of ozonation treatment for the Cedar source ($101M)
- Replacement of Lincoln and Volunteer Reservoirs with new, below-ground, covered structures ($19M)
- Rehabilitation and installation of floating covers at the other seven open reservoirs (Bitter Lake, Lake Forest Park, Beacon, Myrtle, Maple Leaf, Roosevelt, and West Seattle) ($45M)
- Replacement of rehabilitation of the Water Quality Laboratory after 2015 ($5M)

Table 8-2a
Water Quality Projects and Costs
(Millions of Y2000 Dollars)
Proposed 6-Year CIP

	2001	2002	2003	2004	2005	2006	Total
Cedar Treatment Plant	3.5	28.3	40.2	29.2	0.2	0.0	101.4
Reservoir Covering	8.3	11.9	1.0	3.0	8.0	10.7	42.9
Miscellaneous Water Quality	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Total	11.8	40.2	41.4	32.2	8.2	10.7	144.5

Table 8-2b
Water Quality Projects and Costs
(Millions of Y2000 Dollars)
Projected 20-Year CFP

	2001-2005	2006-2010	2011-2015	2016-2020	Total
Cedar Treatment Plant	101.4	0.0	0.0	0.0	101.4
Reservoir Covering	32.2	13.3	11.1	7.4	64.0
Water Quality Lab	0.0	0.0	0.0	5.0	5.0
Miscellaneous Water Quality	0.2	0.0	0.0	0.0	0.2
Total	133.8	13.3	11.1	12.4	170.6

8.3.3 Water Supply and Conservation

Water supply projects (Tables 8-3a and 8-3b) increase the supply of water, protect existing supplies, or reduce demand through conservation. This program upgrades transmission pipelines and promotes residential and commercial water conservation. The projected CFP includes $98 million in 2001-2020 for water supply and conservation projects. Key projects and programs in this category are as follows (with estimated 20-year expenditures):

- Implementation of the Cedar River Watershed Habitat Conservation Plan (HCP) ($53M)

- Conservation programs designed to reduce water demand in Seattle's direct and wholesale service areas by one percent per year ($42M)

Table 8-3a
Water Supply and Conservation Projects and Costs
(Millions of Y2000 Dollars)
Proposed 6-Year CIP

	2001	2002	2003	2004	2005	2006	Total
Water Conservation	4.5	4.5	4.5	4.1	4.1	4.1	25.7
Habitat Conservation	6.5	10.2	12.2	7.2	7.5	2.1	45.7
Total	11.0	14.7	16.7	11.3	11.6	6.2	71.4

Table 8–3b
Water Supply and Conservation Projects and Costs
(Millions of Y2000 Dollars)
Projected 20-Year CFP

	2001-2005	2006-2010	2011-2015	2016-2020	Total
Water Conservation	21.6	20.3	0.0	0.0	41.9
Habitat Conservation	43.6	5.7	3.8	2.6	55.7
Total	65.2	26.0	3.8	2.6	97.6

For new supply, SPU plans to participate in Tacoma's Second Supply Project. It is expected that Tacoma will own, finance, and operate the project, with SPU having the long term right to a capacity share in it. SPU's share of the capital costs for the project are estimated at $83 million, but are not shown in the CFP or the CIP since the project will be financed by Tacoma. SPU will not own any physical facilities. SPU would make annual payments from its O&M budget to Tacoma that would cover SPU's share of capital recovery (principal), debt service, and current year operational costs for the project.

8.3.4 Other Agency Projects

These projects (Tables 8-4a and 8-4b) consist either of reimbursable work performed for other agencies or projects undertaken because they are cost effective when completed in coordination with projects initiated by other agencies. This program category includes projects such as utility relocations needed to accommodate other agencies' capital improvements. The most significant single agency requesting these projects in the next 20 years will be Sound Transit. In addition to installing pipes to supply water to Sound Transit stations, rail alignment will require the water system to

move existing transmission pipelines and water mains. The projected CFP includes $21 million in other agency project costs for 2001-2020.

Table 8-4a
Other Agency Projects and Costs
(Millions of Y2000 Dollars)
Proposed 6-Year CIP

	2001	2002	2003	2004	2005	2006	Total
Other Agency Projects	2.4	2.0	1.0	0.8	1.1	0.8	8.1
Sound Transit Relocation	0.2	0.6	0.6	0.6	0.5	0.3	2.8
Total	2.6	2.6	1.6	1.4	1.6	1.1	10.9

Table 8-4b
Other Agency Projects and Costs
(Millions of Y2000 Dollars)
Projected 20-Year CFP

	2001-2005	2006-2010	2011-2015	2016-2020	Total
Other Agency Projects	7.2	3.4	3.3	3.3	17.2
Sound Transit Relocation	2.5	1.5	0.0	0.0	4.0
Total	9.7	4.9	3.3	3.3	21.2

8.3.5 Technology

This program category (Tables 8-5a and 8-5b) includes information technology projects needed to improve SPU's efficiency, productivity, reliability, and customer service. Because of the rapid pace of technological change, a placeholder amount rather than specific technology projects has been included for the period 2011-2020. A total of $77 million in technology projects was included in the projected CFP for 2001-2020. Key projects and programs in this category are as follows:

Near-term improvements include SCADA per the 1998 SCADA Strategic Plan.

- Upgrade of Supervisory Control and Data Acquisition (SCADA) System as recommended by 1998 SCADA Strategic Plan ($18M)
- Other information technology improvements in areas as diverse as financial management, automated meter reading, and integration of computers with telephone systems ($58M).

8.4 Schedule of Improvements

As noted previously, a copy of the projected 2001-2025 CFP is included in Appendix 8-B. The projected CFP is sorted by program category and includes the major projects within each program category, together with the estimated cost of each and the projected year of completion.

Table 8-5a Technology Projects and Costs (Millions of Y2000 Dollars) Proposed 6-Year CIP							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**Total**
Other Technology Projects	5.9	5.3	3.9	3.0	2.4	2.4	22.9
Supervisory Control and Data Acquisition	1.5	1.5	1.5	1.9	2.1	2.0	10.5
Total	7.4	6.8	5.4	4.9	4.5	4.4	33.4

Table 8-5b Technology Projects and Costs (Millions of Y2000 Dollars) Projected 20-Year CFP					
	2001-2005	**2006-2010**	**2011-2015**	**2016-2020**	**Total**
Other Technology Projects	20.4	12.9	12.4	12.9	58.6
Supervisory Control and Data Acquisition	8.5	9.6	0.0	0.0	18.1
Total	28.9	22.5	12.4	12.9	76.7

Appendix 8-A includes information excerpted from the proposed 2001-2006 CIP for each of the major projects, including project descriptions, summaries of why each project is needed, and descriptions of any alternatives evaluated to date. Note that the CIP is a more detailed listing of projects than the CFP.

8.5 Summary

This section has described SPU's short-term and longer-term capital improvement needs. Table 8-6 shows the proposed expenditures for each program category in 5-year increments for the period 2001-2020.

Table 8-6
Capital Facilities Plan Summary
(Millions of Y2000 Dollars)

	2001-2005	2006-2010	2011-2015	2016-2020	Total
Water Infrastructure	176.5	169.9	154.5	143.1	644.0
Water Quality	133.8	13.3	11.1	12.4	170.6
Water Supply and Conservation	65.2	26.0	3.8	2.6	97.6
Other Agency Projects	9.7	4.9	3.3	3.3	21.2
Technology	28.9	22.5	12.4	12.9	76.7
Total	414.1	236.6	185.1	174.3	1,010.1

SPU capital needs peak during the first six years of the CFP.

SPU's projected capital needs peak during the first six years of the CFP, ranging in present worth from approximately $57 million to $102 million per year. During these years, SPU plans to finish a major new water treatment facility for the Cedar River source, cover several open distribution reservoirs, and make improvements to its distribution and transmission infrastructure. Beyond the year 2006, SPU's projected annual capital needs are not as great, ranging from approximately $27 million to $58 million per year. However, it should be noted that these longer-term estimates will likely escalate over time, due to inflation and as additional capital needs are identified.